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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:

Applicants:	:	Zhu et al.
Serial No.	:	10/009,368
Filing Date	:	December 7, 2001
Title of Invention	:	UNITARY PACKAGE IDENTIFICATION AND DIMENSIONING SYSTEM EMPLOYING LADAR-BASED SCANNING METHODS
Examiner	:	
Group Art Unit	:	2876
Attorney Docket No.	:	108-085USAC00

Honorable Commissioner of Patents
and Trademarks
Washington, DC 20231

INFORMATION DISCLOSURE STATEMENT
UNDER 37 C.F.R. 1.97

Sir:

In order to fulfill Applicants' continuing obligation of candor and good faith as set forth in 37 C.F.R. 1.56, Applicants submit herewith an Information Disclosure Statement prepared in accordance with 37 C.F.R Sections 1.97, 1.98 and 1.99.

The disclosures enclosed herewith are as follows:

U.S. PUBLICATIONS

NUMBER	FILING DATE	TITLE
6,296,187 B1	November 12, 1999	CCD-BASED BAR CODE SCANNER
6,257,490 B1	November 9, 1999	CCD-BASED BAR CODE SCANNER
6,177,999 B1	August 25, 1997	DIMENSIONING SYSTEM
6,147,358	June 9, 1999	CCD SCANNER HAVING IMPROVED SPECULAR REFLECTION DISCRIMINATION
6,137,577	November 3, 1999	METHOD AND APPARATUS FOR MEASURING DIMENSIONS OF OBJECTS ON A CONVEYOR

6,123,264	April 8, 1997	APPARATUS AND METHOD FOR DETERMINING A DISTANCE TO A TARGET
6,069,696	June 7, 1996	OBJECT RECOGNITION SYSTEM AND METHOD
6,064,629	December 15, 1998	OBJECT DETECTION APPARATUS AND METHOD
6,053,409	June 24, 1997	DYNAMIC FOCUSING APPARATUS FOR AN OPTICAL IMAGING SYSTEM USING A DEFORMABLE MIRROR
6,049,386	October 21, 1998	IN-MOTION DIMENSIONING SYSTEM AND METHOD FOR CUBOIDAL OBJECTS
5,889,550	June 10, 1996	CAMERA TRACKING SYSTEM
5,991,041	November 12, 1998	METHOD AND APPARATUS FOR MEASURING DIMENSIONS OF OBJECTS ON A CONVEYOR
5,984,186	October 29, 1997	CCD-BASE BAR CODE SCANNER
5,979,760	June 27, 1997	SCANNER WITH LINEAR ACTUATOR BASED LENS POSITIONING SYSTEM
5,969,823	December 14, 1998	DIMENSIONING SYSTEM
5,923,428	July 11, 1997	METHOD AND APPARATUS FOR MEASURING DIMENSIONS OF OBJECTS ON A CONVEYOR
5,900,611	June 30, 1997	LASER SCANNER WITH INTEGRAL DISTANCE MEASUREMENT SYSTEM
5,870,220	July 12, 1996	PORTABLE 3-D SCANNING SYSTEM AND METHOD FOR RAPID SHAPE DIGITIZING AND ADAPTIVE MESH GENERATION
5,869,827	August 15, 1997	MULTIPLE WINDOW SCANNER AND METHOD FOR MULTIPLE FOCAL DISTANCE READING

5,850,370	February 11, 1997	LASER-BASED DIMENSIONING SYSTEM
5,831,220	April 22, 1997	AUTOMATED PACKAGE SHIPPING MACHINE
5,831,737	June 2, 1997	IN MOTION DIMENSIONING SYSTEM FOR CUBOIDAL OBJECTS
5,814,802	February 23, 1996	HIGH SPEED IMAGING APPARATUS FOR CCD BASED SCANNERS
5,737,438	March 7, 1994	IMAGE PROCESSING
5,699,161	July 26, 1995	METHOD AND APPARATUS FOR MEASURING DIMENSIONS OF OBJECTS ON A CONVEYOR
5,689,092	June 12, 1996	CONVEYOR FRICTION SCALE
5,661,561	June 2, 1995	DIMENSIONING SYSTEM
5,656,799	April 29, 1994	AUTOMATED PACKAGE SHIPPING MACHINE
5,633,487	December 15, 1995	MULTI-FOCAL VISION SYSTEM
5,600,119	October 13, 1995	DUAL LINE LASER SCANNING SYSTEM AND SCANNING METHOD FOR READING MULTIDEMENSIONAL BAR CODES
5,581,067	October 20, 1994	COMPACT BAR CODE SCANNING MODULE WITH SHOCK PROTECTION
5,555,090	October 24, 1994	SYSTEM FOR DIMENSIONING OBJECTS
5,547,034	January 10, 1994	CONVEYOR FRICTION SCALE
5,543,610	April 15, 1994	COMPACT BAR CODE SCANNING ARRANGEMENT
5,495,097	September 14, 1993	PLURALITY OF SCAN UNITS WITH SCAN STITCHING

5,412,198	November 8, 1991	HIGH-SPEED SCANNING ARRANGMENT WITH HIGH-FREQUENCY LOW-STRESS SCAN ELEMENT
5,373,148	September 10, 1992	OPTICAL SCANNERS WITH SCAN MOTION DAMPING AND ORIENTATION OF ASTIGMANTIC LASER GENERATOR TO OPTIMIZE READING OF TWO-DIMENSIONALLY CODED INDICIA
5,331,118	November 27, 1992	PACKAGE DIMENSIONAL VOLUME AND WEIGHT DETERMINATION SYSTEM FOR CONVEYORS
5,329,103	October 30, 1991	LASER BEAM SCANNER WITH LOW COST DITHERER MECHANISM
5,280,165	April 14, 1992	SCAN PATTERN GENERATORS FOR BAR CODE SYMBOL READERS
5,224,088	February 10, 1992	HIGH RESOLUTION OPTICAL SCANNER
5,220,536	February 28, 1992	MEASURING METHOD AND APPARATUS
5,193,120	February 27, 1991	MACHINE VISION THREE DIMENSIONAL PROFILING SYSTEM
5,168,149	May 8, 1990	SCAN PATTERN GENERATORS FOR BAR CODE SYMBOL READERS
5,080,456	February 26, 1990	LASER SCANNERS WITH EXTENDED WORKING RANGE
5,076,690	May 14, 1990	COMPUTER AIDED POSITIONING SYSTEM AND METHOD
4,958,894	January 23, 1989	BOUNCING OSCILLATING SCANNING DEVICE FOR LASER SCANNING APPARATUS
4,904,034	January 29, 1988	SCANNING APPARATUS

4,717,241	June 11, 1985	LIGHT DEFLECTION DEVICE
4,632,501	February 16, 1984	RESONANT ELECTROMECHANICAL OSCILLATOR
4,580,894	June 30, 1983	APPARATUS FOR MEASURING VELOCITY OF A MOVING IMAGE OR OBJECT
4,387,297	February 29, 1980	PORTABLE LASER SCANNING SYSTEM AND SCANNING METHODS
4,333,006	December 12, 1980	MULTIFOCAL HOLOGRAPHIC SCANNING SYSTEM
4,063,287	February 23, 1976	TRACKING MIRROR DEVICE FOR A VIDEO DISC PLAYER
4,044,283	October 22, 1975	ELECTROMECHANICAL RESONATOR
3,947,816	July 1, 1974	OMNIDIRECTIONAL OPTICAL SCANNING APPARATUS
3,671,766	June 29, 1970	OSCILLATING MECHANISM

FOREIGN PUBLICATIONS

NUMBER	PUBLICATION DATE	TITLE
WO 00/75856	December 14, 2000	UNITARY PACKAGE IDENTIFICATION AND DIMENSIONING SYSTEM EMPLOYING LADAR-BASED SCANNING METHODS
WO 97/22082	June 19, 1997	MULTI-FOCAL VISION SYSTEM
GB 2 189 594 A	October 28, 1987	OPTOELECTRONIC MEASUREMENT OF PACKAGE VOLUME

TECHNICAL PUBLICATIONS

"Accu-Sort - Tunnel Scanning System" by www.accusort.com/mktg/as01.html, pages 1-2.

"DIMENSIONING THE RIGHT WAY: RELIABLY" by Cargoscan, pages 1-16.

"THE MINI-X" by Accu-Sort Systems, Inc., Telford, PA.

"OMNI-SCAN TUNNEL" by Metrologic Instruments, Inc..

INTERNATIONAL SEARCH REPORTS

App. No.	Filing Date
PCT/US00/15624	August 9, 2000

STATEMENT OF PERTINENCE

U.S. Patent No. 6,296,187 B1 to Shearer discloses a bar code scanning system for a conveyor system which includes a CCD camera that writes data to a memory. Data is stored in the memory as a two-dimensional image at periodic time frames based on scanning by the CCD camera. Data is written out of the memory by a controller, to create a virtual X-scan pattern, that can be read and decoded by a decoder that is configured to decode X-scan patterns. Alternatively, the memory can be configured as a first memory region for receiving even pixel data, and a second memory region for receiving odd pixel data.

U.S. Patent No. 6,257,490 B1 to Tafoya discloses a bar code scanning system for a conveyor system in which a first conveyor and a second conveyor are disposed apart from each other by a small gap region. A light emitting device is positioned in the gap underneath a top surface of the first and second conveyors, and the light emitting device shines light onto bar code labels on a bottom side of objects as the objects traverse from the first conveyor to the second conveyor. A light receiving device is also positioned in the gap, and the light receiving device receives reflected light from the bottom side of the objects due to the light being shined on the objects by the light emitting device. The gap is covered by a glass or plastic plate, so as to allow light to pass substantially therethrough.

U.S. Patent No. 6,177,999 B1 to Wurz et al. discloses a dimensioning system for determining the minimum size box necessary to enclose an object traveling on a moving conveyor. The dimensioning system is comprised of a light source which generates a scan beam that is moved by a mirrored wheel. A line scan camera whose field of view tracks the moving scan beam receives images of the scan beam and outputs a signal which is processed to compute a three dimensional box structure of the scanned object.

U.S. Letters Patent No. 6,147,358 to Hecht discloses an overhead bar code scanning system mounted over a conveyor belt structure. The system utilizes two linear CCD detectors and a bandpass filter structure to improve the ability of the scanner to discriminate against specular reflection. A coded symbology is illuminated by a noncoherent light source and light reflected from the coded symbology along a first path strikes the front face of the bandpass filter. The bandpass filter, functioning as a notch filter, transmits a select bandwidth of light while reflecting all other light onto a first CCD detector. Simultaneously, light reflected from the bar code symbol travels along a second path, at a different angle with respect to the plane of the coded symbology than the first path, is reflected from a mirror onto the back face of the bandpass means. The bandpass filter transmits the select bandwidth of light onto a second CCD detector and reflects all other light. The second CCD detector has a notch filter which permits the detection of only the select bandwidth.

U.S. Patent No. 6,137,577 to Woodworth discloses a method and apparatus for measuring the length, width and height of rectangular solid objects moving on a conveyor. The apparatus includes a light curtain, two laser triangulation range finders, and a pulse tachometer mounted on a frame around a conveyor. As an object is conveyed through the frame, measurements from each of the sensors are correlated by a digital computer to estimate the length, width and height of the object. The method and apparatus does not require a break in the surface of the conveyor, and is insensitive to object placement and orientation on the conveyor.

U.S. Letters Patent No. 6,123,264 to Li et al. discloses a range finder for use with a bar code scanning system. An image of a scan line is detected by a CCD sensor array. Distance from the scanner to the bar code symbol is determined from the length of the detected scan line image on the CCD sensor array.

U.S. Patent No. 6,069,696 to McQueen et al. discloses an object recognition system which comprises a sensing apparatus for collecting light reflected from objects presented at a point-of-sale machine. The sensing apparatus includes a mechanism, such as a holographic disk or diffraction grating, for separating the color components of the light reflected from the object and directing, the color components onto an opticla detector such as a two-dimensional imaging array, or a one-dimensional imaging array or single photo-sensitive optical cell used in conjunction with a rotating mirror. A pattern recognizer compares the spectral response, including the locations, amplitudes and widths of energy peaks of the different color components, against premeasured characteristics of known objects in order to classify the object. The weight of the object can be measured with a scale, and the density of the object calculated, with the weight and density being used by the pattern recognizer to further classify the object. In one embodiment, a plurality of narrowband illumination sources are operated in time-sequential manner, each illuminating with a different wavelength band of light, in order to allow separate color measurements. The object recognition system may be integrated in a single unit along with an optical code reader, and may share all or part of the same exit aperture therewith. The object recognition system may include thermal detection or a particle source and secondary emission detection device, either alone or in conjunction with other object recognition means.

U.S. Patent No. 6,064,629 to Stringer et al. discloses a method and apparatus for ensuring accuracy of weight measurement of objects on a conveyor and providing security against

pilferage or miscoding of the objects. A series of sensors such as photocells linked to a process control unit sense passage of objects to respectively activate a scale and cubing system associated with the conveyor, to release an additional object for weighing and cubing, to sense overlong objects exceeding the length of the scale, and to detect when an object has been stolen or otherwise removed (as by falling off) the conveyor between various locations through the use of programmed timing "windows" between the various sensors. If an object does not trigger a sensor within the window measured from passage past a preceding sensor, an error message is generated.

U.S. Letters Patent No. 6,053,409 to Brobst et al. discloses in Fig. 11, a tunnel laser scanning system which employs apparatus for increasing the depth of the field of the optical scanning mechanism contained therein. The apparatus is optically located between a laser source and a scan mirror and includes a plurality of alternating curved and flat facets. Alternatively, a piezoelectric deformable mirror may be optically located between the laser source and a flat faceted scan mirror to provide for increased depth of field of the optical scanning mechanism.

U.S. Patent No. 6,049,386 to Stringer et al. discloses an in-motion measuring system for determining the length and width of linearly-moving cuboidal objects through the use of object speed, the times during which six light beams oriented across the path of the object are obstructed by the object, and the angles of the light beams with respect to the direction of object movement. The height of an object may also be determined through use of a vertically-extending light curtain with horizontally-oriented light beams, or via an ultrasonic sensor.

U.S. Patent No. 5,889,550 to Reynolds discloses a camera tracking system which determines the three dimensional (3D) location and orientation of the film plane of a camera providing live recording of a subject, thereby defining a 3D coordinate system of the live action scene into which animated objects or characters may be automatically mapped with proper scale and 3D visual object by a computer animation system.

U.S. Letters Patent Nos. 5,991,041, 5,923,428 and 5,699,161, all to Woodworth disclose a system for measuring the length, width, and height of rectangular solid objects moving on a conveyor. The system includes a light curtain, two laser triangulation range finders, and a pulse tachometer mounted on a frame around a conveyor. As an object is conveyed through the frame, measurements from each of the sensors are correlated by a digital computer to estimate the length, width and height of the object. As disclosed, the method and system does not require a break in the surface of the conveyor, and is insensitive to object placement and orientation on the conveyor.

U.S. Letters Patent No. 5,984,186 to Tafoya discloses a CCD bar code scanning system for use with a conveyor system, in which a first conveyor and a second conveyor are disposed apart from each other by a small gap region. A light emitting device is positioned in the gap underneath a top surface of the first and second conveyors, and the light emitting device shines light onto bar code labels on a bottom side of objects as the objects traverse from the first conveyor to the second conveyor. A light receiving device is also positioned in the gap, and the light receiving device receives reflected light from the bottom side of the objects due to the light being shined on the objects by the light emitting device. The gap is covered by a glass or plastic

plate, so as to allow light to pass substantially therethrough.

U.S. Letters Patent No. 5,979,760 to Freyman et al. discloses in Fig. 11B, a four-zone tunnel-type scanning system for reading bar code symbologies using a focusing illuminating source. The scanner uses a coherent light source for illuminating the coded symbol during a scan and a detector for collecting the reflected light energy from the coded symbol. Both the illuminating and collecting devices include lenses which are in variable spacial relationship with each other. The scanner varies the relationship between the light source and associated focusing lens to provide the narrowest focused beam at the barcode location.

U.S. Letters Patent Nos. 5,969,823 and 5, 661,561 to Wurz et al. disclose a dimensioning system for determining the minimum size box necessary to enclose an object traveling on a moving conveyor. The dimensioning system comprises a light source which generates a scan beam that is moved by a mirrored wheel. A line scan camera, whose telecentric field of view tracks the moving scan beam, receives images of the scan beam and outputs a signal which is processed to compute a three dimensional box structure of the scanned object.

U.S. Patent No. 5,923,428 to Woodworth discloses a method and apparatus for measuring the length, width and height of rectangular solid objects moving on a conveyor. The apparatus includes a light curtain, two laser triangulation range finders, and a pulse tachometer mounted on a frame around a conveyor. As an object is conveyed through the frame, measurements from each of the sensors are correlated by a digital computer to estimate the length, width and height of the object. The method and apparatus does not require a break in the surface of the conveyor, and is insensitive to object placement and orientation on the conveyor.

U.S. Letters Patent No. 5,900,611 to Hecht discloses a one-sided tunnel scanning system for reading coded symbologies, using a coherent, visible light source for illuminating the coded symbol during a scan and a detecting means for collecting the reflected light energy from the coded symbol. The system also employs an invisible light source illuminating the coded symbol during the scan and a one-dimensional position-sensitive detector whose field of view receives images of the illuminating beam. The position-sensitive detector outputs a current which is processed to detect the presence and compute the distance of an object being scanned. Both the visible and invisible light sources from the scanner travel along a shared, coaxial path to and from the object.

U.S. Letters Patent No. 5,870,220 to Migdal et al. discloses a portable 3D scanning system that collects 2D-profile data of objects using a combination of a laser-stripe positioning device and a video camera which detects the images of the laser stripe reflected from the object. The scanning system includes a laser-stripe generator, a video camera, a scanning mirror attached to a continuously rotating motor, an encoder or a photodiode operationally coupled to the motor, and associated electronics. As the rotating scanning mirror reflects the laser stripe and variably positions the laser stripe across the object, the encoder or the photodiode generates signals indicating the angular position of the mirror. The video images of the reflected laser stripes are stored on a storage medium, while data relating to the angular positions of the laser stripes recorded in the video images are simultaneously stored on a storage medium. A computer subsequently synchronizes and processes the recorded laser stripe data with the angular-position

data to generate a 3D model of the object by applying triangulation calculation and other post-scanning methods, e.g., multi-resolution analysis and adaptive-mesh generation. The multi-resolution analysis, which applies more points to resolve fine details and fewer points for smooth regions of the objects, leads to significant data compression. The adaptive mesh, which includes connected polygonal elements and which may have multiple resolutions and tolerances, is generated by the adaptive-mesh generating routine.

U.S. Letters Patent No. 5,869,827 to Rando discloses a multiple window bar code reading system for reading bar codes through each window. The field of view of each window is focused to different focal distances in the scan volume using sensors that control focal distance setting from each window.

U.S. Patent No. 5,850,370 to Stringer et al. discloses a method and apparatus for measuring the dimensions and determining the three-dimensional, spatial volume of objects, particularly small objects. Reflected laser light sensors are employed. A stationary measurement embodiment of the apparatus may be employed to measure regular cuboidal objects. A dynamic or in-motion embodiment may be employed to measure the dimensions of cuboidal objects or a three-dimensional outline of objects of irregular configuration.

U.S. Patent No. 5,831,220 to Ramsden et al. discloses a system for accepting and storing items for subsequent pickup by a commercial carrier which includes a storage area defined by an outer housing, and a customer interface area that includes a weighing unit and a unit, such as a magnetic card reader, for accepting payment from a customer. The system may also include a control system that accepts address information from the customer through a key pad, and then instructs a printer to print an address label for the item. The system includes safeguards which prevent unauthorized access to the storage area, and will not provide a receipt to the customer until internal sensors verify deposit of the item. A manifest printer may also be provided for the benefit of the commercial carriers who service the system, to print out a summary of the transactions that pertain to each carrier. Alternatively, no storage area is provided. Instead, the item is given to a human attendant, such as a checkout clerk of a grocery or hardware store and the like, with the appropriate mailing label for validation of receipt of the item by the attendant.

U.S. Patent No. 5,831,737 to Stringer et al. discloses an in-motion measuring system for determining the length and width of linearly-moving cuboidal objects through the use of object speed, the times during which four light beams oriented across the path of the object are obstructed by the object, and the angles of the light beams with respect to the direction of object movement. The height of an object may also be determined through use of a vertically-extending light curtain with horizontally-oriented light beams, or via an ultrasonic sensor.

U.S. Letters Patent No. 5,814,802 to Hecht et al. discloses in Fig. 4, a CCD based tunnel scanning system which comprises a housing having separate compartments with modular assemblies installed therein. A decoder compartment houses components associated with locating and decoding an image. An optics compartment houses the mirrors and associated optics for reflecting the subject image onto the CCD detector. A lighting compartment includes high intensity lamps and the associated components for illuminating an object to be imaged. The lighting compartment includes a heat management system which removes the heat from the high

intensity lamps and prevents heat from migrating to other compartments within the housing.

U.S. Letters Patent No. 5,737,438 to Zlotnick et al. discloses in Fig. 1, an image-based tunnel system for locating labels on images of parcels. As disclosed, the system comprises apparatus for generating and storing in digital form, an image of the parcel comprising pixels arranged in rows and columns; classification logic for classifying each pixel as either a label pixel, a background pixel or neither, based on the pixel color; segmentation logic for reclassifying each pixel as either label or background based on its original classification and the classification of pixels in its neighborhood; and identification logic for identifying the boundaries of regions in which all pixels are classified as label pixels.

U.S. Patent No. 5,699,161 to Woodworth discloses a method and apparatus for measuring the length, width, and height of rectangular solid objects moving on a conveyor. The apparatus includes a light curtain, two laser triangulation range finders, and a pulse tachometer mounted on a frame around a conveyor. As an object is conveyed through the frame, measurements from each of the sensors are correlated by a digital computer to estimate the length, width and height of the object. The method and apparatus does not require a break in the surface of the conveyor, and is insensitive to object placement and orientation on the conveyor.

U.S. Letters Patent No. 5,689,092 to Wurz et al. discloses a conveyor scale assembly for use in combination with a conveyor belt for weighing an article on the moving conveyor belt. The conveyor scale assembly is comprised of a slider bed which contacts the underside of the moving conveyor belt which generates a friction force between the conveyor belt and the slider bed. Attached to the slider bed is a sensor which continuously measures the friction force and transmits data representing the measured friction force. A CPU receives and processes the representative data and provides a weight for the article on the conveyor belt.

U.S. Patent No. 5,661,561 to Wurz et al. discloses a dimensioning system for determining the minimum size box necessary to enclose an object traveling on a moving conveyor. The dimensioning system is comprised of a light source which generates a scan beam that is moved by a mirrored wheel. A line scan camera whose field of view tracks the moving scan beam receives images of the scan beam and outputs a signal which is processed to compute a three dimensional box structure of the scanned object.

U.S. Patent No. 5,656,799 to Ramsden et al. discloses a system for accepting and storing items for subsequent pickup by a commercial carrier that includes a storage area which is defined by an outer housing, and a customer interface area that includes a weighing unit and a unit, such as a magnetic card reader, for accepting payment from a customer. The system may also include a control system that accepts address information from the customer through a key pad, and then instructs a printer to print an address label for the item. The system includes safeguards which prevent unauthorized access to the storage area, and will not provide a receipt to the customer until internal sensors verify deposit of the item. A manifest printer may also be provided for the benefit of the commercial carriers who service the system, to print out a summary of the transactions that pertain to each carrier. Alternatively, no storage area is provided. Instead, the item is given to a human attendant, such as a check out clerk of a grocery or hardware store and the like, with the appropriate mailing label for validation of receipt of the item by the attendant.

U.S. Letters Patent No. 5,633,487 to Schmutz et al. discloses a multi-focal machine-vision system that images bar code labels moving through a horizontal plane at variable object distances within the system's object depth of field with a plurality of sequential line images, each with different object lengths which gradate into plural focused object planes, and the object plane within which the bar code label lies provides a focused optical image of the bar code to a multilinear photodetector which transduces the focused optical image into a corresponding electrical signal for further processing.

U.S. Patent No. 5,600,119 to Dvorkis et al. discloses a system for reading bar code symbols or the like, having a scanner for generating a laser beam directed toward a target and producing a first narrowly spaced apart dual line scanning pattern that enables the user to manually aim and direct the beam to the location desired by the user and a relatively wider spaced apart dual line second scanning pattern that sweeps an entire symbol to be read, and a detector for receiving reflected light from such symbol to produce electrical signals corresponding to data represented by such symbol.

U.S. Patent No. 5,581,067 to Grosfeld et al. discloses a scanner module for use in a bar code reader which has a scanning mirror which is mounted to a bracket by way of leaf-spring, allowing the mirror to oscillate in one direction. The bracket is hung from a stationary chassis by means of two strips of mylar film, allowing the entire bracket to oscillate in the perpendicular direction, thereby providing two dimensional oscillation of the mirror and raster scanning of a light beam reflected from the mirror. The mylar sheets are protected against mechanical shock by pins which pass through holes in the bracket. The pins are slightly smaller than the holes, allowing sufficient clearance for movement of the bracket during normal operation, but preventing too much stress being placed upon the mylar films if the module is dropped. The pins also provide accurate alignment of the bracket with respect to the chassis.

U.S. Letters Patent No. 5,555,090 to Schmutz discloses a system for measuring the height of an object having an outer surface. The system comprises a system for generating an energy beam along a path, such as light, having a structured pattern, wherein the structured pattern of the energy beam irradiates the outer surface of the object. The structured light pattern comprises a constant dimension. The system further comprises a sensor for sensing the outer surface of the object irradiated by the structured pattern. The system comprises a system for calculating the height of the object in response to the constant dimension of the structured pattern irradiating the outer surface of the object and sensed by the sensor. This system for calculating the height of the object preferably comprises a programmed computer containing a series of algorithmic steps for deriving a refined overall height profile of the object.

U.S. Letters Patent No. 5,547,034 to Wurz et al. discloses a conveyor scale assembly for use in combination with a conveyor belt for weighing an article on the moving conveyor belt. The conveyor scale assembly is comprised of a slider bed which contacts the underside of the moving conveyor belt which generates a friction force between the conveyor belt and the slider bed. Attached to the slider bed is a sensor which continuously measures the friction force and transmits data representing the measured friction force. A CPU receives and processes the representative data and provides a weight for the article on the conveyor belt.

U.S. Patent No. 5,543,610 to Bard et al. discloses a bar code scanning system including an optical scanner for scanning a target symbol, such as a bar code, and generating a corresponding electrical signal. The scanner housing may be mounted to a single finger ring support, which can be cylindrical in shape. The scanner housing may include a scanner activation switch, which may be of the voice recognition type. A transmitter for transmitting the analog or digitized electrical signal, either by wire or RF signal, to a receiver on the user's person is also included in the scanner housing. A decoder is preferably included within the receiver housing. The receiver housing may also have a display for displaying decoded data and a keyboard for inputting entry data. Signal processing circuitry for digitizing the electrical signals generated by the scanner may be included either in the scanner or receiver housing. The receiver housing also may include an RF transmitter for transmitting the decoded data and any entry data to a separate computer unit. The receiver housing can be worn on the user's wrist or belt.

U.S. Letters Patent No. 5,495,097 to Katz et al., discloses a tunnel-type scanning system having a plurality of optical scan units. Each optical scan unit includes means for emitting light toward an item bearing an indicia. Each optical scan unit also includes means for receiving light reflected from the indicia and generating signals corresponding to the intensity of the reflected light. Also provided is a central control unit which includes means for combining together signals corresponding to the signals generated by at least two of the scan units to fully decode information contained on the indicia.

U.S. Patent No. 5,412,198 to Dvorkis discloses a scanning arrangement in a scanner which is operative for repetitively scanning indicia having parts of different light reflectivity; for example, such as a bar code symbol, and also pertains to the operation of a scanning arrangement of that type at high scanning speeds in two-dimensional and multi-axes scan patterns. A resonance asymmetric scan element (RASE) in which a scan element, which is preferably constituted of a mirror, is in effect attached along the upper side edges thereof to oscillation-imparting spring-means and not at the center of mass of the mirror as heretofore. This allows for higher frequencies of operation for the scan element at lower encountered stresses in that the fast axis of rotation of the scan element or mirror; in essence, the axis of oscillatory rotation about which the mirror is rotated at high frequencies substantially coincides with its center of mass.

U.S. Patent No. 5,373,148 to Dvorkis et al. discloses an optical scanner with a component for producing a beam scanning motion mounted on a first flexible strip or planar spring. One or more additional flexible strips, adjacent the first flexible strip, provide additional support to prevent droop by the first flexible strip under the weight of the scanning component. The additional flexible strips also frictionally damp the low frequency motion of the first flexible strip to prevent interference with scanning due to vibration induced from movement of the scanner by an operator. In two-dimensional scanners, where the component moves in two orthogonal directions at two different speeds, the additional strip type frictional damping is applied to the planar spring which provides the necessary flexible support for motion in the slow speed scanning direction. Also, two-dimensional scanners conforming to the present invention use a gain-guided visible laser diode oriented in a particular manner so that the astigmatism of the laser beam extends the working range by compensating for decreasing fast direction scan line density at points farther away from the scanner.

U.S. Letters Patent No. 5,331,118 to Jensen discloses a method and system for determining the dimensional volume of a package by moving the package on a conveyor belt system over a horizontally disposed strip containing machine-readable indicia indicating units of incremental length along said strip starting from a zero point and by a vertically disposed strip containing machine-readable indicia indicating units of incremental length along said strip starting from a zero point. A horizontally disposed reader is above the horizontally disposed strip to read the uncovered indicia on the horizontally disposed strip and a vertically disposed reader able to read the uncovered indicia on the vertically disposed strip with a computer to determine the lowest uncovered incremental length measurement of the indicia on the horizontally disposed strip.

U.S. Patent No. 5,329,103 to Rando discloses two resonant cantilever beams oscillate in a sinusoidal pattern. Mirrors disposed on the oscillating ends of the cantilever beams are used to multiplex two scanning and collecting light beams. The cantilever beam parameters and mirror configuration are selected so that the scanning light beam is on the first mirror during the linear portion of its scan. As the first cantilever beam oscillates out of the linear portion of the sine wave, the deflection of the first mirror is just great enough to allow the scanning beam to strike the second mirror during the linear portion of the second mirror's scan. The process is repeated twice each cycle. The collection lens is large enough to receive the full aperture of both mirrors at all times. Multiplexing of scanning diodes is also accomplished by a controller circuit which alternately enables diodes disposed on the ends of respective first and second cantilever beams during the linear portion of each sine wave oscillation.

U.S. Patent No. 5,280,165 to Dvorkis et al. discloses a scan pattern generator for use in a bar code reader which uses a single drive (one coil and one magnet) to produce movement of a reflective surface so as to produce an oscillating movement of the surface in two directions, thereby forming a raster-type scanning pattern when a light beam is reflected off the surface.

U.S. Patent No. 5,224,088 to Atiya discloses a simple high resolution optical scanner which consists of high numerical aperture lens mounted at the end of a flexible cantilever. The lens scans along a curved line as the cantilever bends. In order for the optical path to track the lens position, a mirror is mounted on the cantilever at a point located about 20% of the cantilever length, measured from the fixed mounting point. As the cantilever bends, the angle at this point is half of the angle at the cantilever end. Since the mirror doubles the angle when reflecting the input beam, the input beam will track, and stay parallel to, the lens at the end of the cantilever. This type of scanner is particularly suited to operate in a resonant mode, since the cantilever shape has low inherent damping.

U.S. Patent No. 5,220,536 to Stringer et al. discloses a method and apparatus for measuring the dimensions and determining the three-dimensional, spatial volume of objects. In the preferred embodiment, a light curtain and ultrasonic sensing are employed in combination with the travel time of linearly moving objects to ascertain object dimensions. The preferred embodiment is particularly suitable for measurement of moving, rectangular objects of random orientation with respect to the direction of travel.

U.S. Patent No. 5,193,120 to Gamache et al. discloses a three dimensional imaging system having a diode laser and collimator along with a video camera and digital circuitry wherein when the light from the laser is collimated and hits the surface of an object with the reflected light images picked up by the video camera and the centroid location of each intersection is interpolated translating two dimensional pixels into three dimensional coordinates.

U.S. Patent No. 5,168,149 to Dvorkis et al. discloses high speed scanning arrangements in scanners for reading bar code symbols by oscillating a scanner component mounted on an arm of an asymmetrical U-shaped spring in single or multi-axis scan patterns.

U.S. Patent No. 5,080,456 to Katz et al. discloses a bar code scanner employing a laser source and scan mirror for generating a light beam for scanning a bar code symbol or the like. The working range for distance between the scanner and the symbol is extended by placing an optical element in the path between the laser source and the scan mirror. This optical element may be a figure of rotation such as an axicon. A slit may be positioned downstream of the axicon to block the characteristic concentric rings produced in the beam in areas perpendicular to the scan line.

U.S. Patent No. 5,076,690 to deVos et al. discloses a position sensing system which calculates the X-Y coordinates of a point using triangulation and determines the direction in which the point is moving. The triangulation calculation is based on the coordinates of at least three retroreflective elements spaced apart from each other around the periphery of a two-dimensional coordinate frame, and the measured angles between the lines projected radially outward from the point to each of the retroreflective elements. The accuracy of the measured angles is achieved by using a rotating member supported by dedicated hardware and controlled by software. The member rotates with a beam of light generated by a light transmitting and detecting device positionable at the point. The light transmitting and detecting device receives the beam of light reflected back from the retroreflective elements and generates an output signal in response thereto. A computer processes the output signal for use in calculating the X-Y position of the point and the orientation of the light transmitting and detecting device when it is positioned at the point.

U.S. Patent No. 4,958,894 to Knowles discloses a beam sweeping apparatus for use in a scanning device. The apparatus comprises a mirror mounted on a pivot arm and arranged to be oscillated about an axis in an arc for sweeping a beam of light in a predetermined path. A pair of resilient are located adjacent the pivot arm to establish the limits of the excursion of the arm and mirror. A reversible electromagnetic motor is provided when energized for causing the pivot arm to move in alternate rotational directions until a portion of it engages a respective one of the bmpers, whereupon that bumper prevents further excursion of the arm in that direction and bounces the arm back in the opposite rotational direction. The energization of the electromagnetic motor is coordinated with the engagement of the bumpers by the pivot arm.

U.S. Patent No. 4,904,034 to Narayan et al. discloses a scanner including a source of coherent light, a radial hologon, a lens and a target. Between the light source and the hologon there are means for forming light from the source into a collimated beam having an oblong cross-sectional shape and for directing the beam onto the hologon at a predetermined incident angle

and with the long axis of the oblong cross-sectional shape of the beam radial of the axis of rotation of the hologon. Prismatic means are provided between the hologon and the lens means for so modifying the cross-sectional shape of the beam that the spot at the target station has a selected shape and orientation. This allows the shape, orientation and size of the beam on the hologon to be optimum for duty cycle of the hologon and for spot size on the target. The prismatic means allows the spot shape and orientation on target to be optimized. The prismatic means tends to introduce undesirable bow into the scan line, therefore the wavelength of the light and the grating factor of the hologon are selected to produce an approximately equivalent opposite bow.

U.S. Patent No. 4,717,241 to Aagano discloses a light deflection device comprised of a cantilever member, a light deflecting element provided near the fixed end of the cantilever member, and a means of imparting deflection to the free end of the cantilever member, so that the angle of inclination of the light deflecting element, and hence the angle of deflection of the light, can be set and controlled with very high precision by the controlled deflection of the cantilever member by said means.

U.S. Patent No. 4,632,501 to Glynn discloses a resonant electromechanical oscillator which includes a base portion, a driven portion, a cantilevered sheetform flexural suspension which spaces the driven portion from the base portion for oscillation about an axis in the plan of the sheet-form suspension, and an electro-magnetic drive which includes cooperating portions on the base and driven portions for oscillating the driven portion at a resonant frequency. The ends of the sheetform suspension are coupled to the base and driven portions with at least one end coupling being adjustable to select the resonant frequency of the oscillator by changing the effective length of the sheet suspension. Fixed surfaces on the base portion limit angular excursion of the driven portion and limit buckling distortion of the sheet-form suspension. Preferred embodiments of the oscillator have a driven portion with a mass in the range of two to ten grams, and withstand impact loads of at least five hundred g's. In particular, a rugged resonant scanner, capable of use in a portable device, is shown.

U.S. Letters Patent No. 4,580,894 to Wojcik discloses a system for measuring the velocity of a moving image or object. As disclosed, the system comprises: a first array of sensors extending in a first direction transverse to image motion for sensing a primary set of image elements; a second array of sensors extending generally in the first direction and spaced a known distance from the first array for sensing successive sets of image elements; a device for correlating the primary set of image elements and for producing a correlation level indicating the level of correlation of the primary set with each of the successive sets; means for selecting one of the correlation levels which indicates an optical level of correlation; and means for determining the time interval between the sensing of the first array of the primary set and the sensing by the second array of the successive set corresponding to the selected correlation level; in addition, the means for correlating may include means for comparing with the primary set each successive set in a plurality of different positions along the first direction and for producing a comparison level indicating the level of comparison of the primary set with each of the successive sets in each of the different positions along the first direction; and means for determining the displacement between the position in which the successive set is sensed and the position corresponding to the indicated comparison level.

U.S. Patent No. 4,387,297 to Swartz et al. discloses an entirely field-portable laser scanning system for reading bar code symbols includes a light-weight and small-sized laser scanning head. The laser source, power supply component, optics, scanning elements, sensor circuit, and signal processing circuitry are specially designed for minimal size and weight and volume such that they can all be mounted in the head. The head can be bracket-mounted or hand-held. The housing for the head can be provided with a handle grip, or can be gun-shaped. High speed oscillating scanning motors and/or penta-bimorph scanners are used as scanning elements. A trigger initiates repetitive scanning of each object bearing a symbol, and an indicator indicates when the scanning of that particular object has been terminated. A body harness supports the remaining scanner system circuitry. A non-bulky, freely-movable cable interconnects the head to the body harness. Methods of scanning the symbol and of operating the system are also enclosed.

U.S. Letters Patent No. 4,333,006 to Gorin et al. discloses a holographic scanning system for scanning bar code indicia in which the light beam of a laser is directed to a first set of holograms located on a single rotating disc in which each hologram will generate an individual scan beam having a slightly different focal length and direction angle from that of the other holograms. The generated scanning beams are directed on a target area through which passes a label or object bearing a bar code indicia. Each of the scan beams is projected in an overlapping relationship on the target area, thereby providing an enhanced depth of focus enabling a more effective reading operation. The light reflected from the bar code indicia is picked up by a second set of holograms mounted on the rotating disc and focused at a point at which is located an optical detector for use in reading the bar code.

U.S. Patent No. 4,063,287 to Van Rosmalen discloses a tracking mirror device, in particular for a video disc player, in which for following an information track on a video disc with a beam of radiation, use is made of a mirror which oscillates at a high frequency, which causes the beam of radiation, which serves for scanning the information track, to oscillate transversely to the information track at a high frequency and a small amplitude, while the filtered-out high-frequency signal, as a function of its amplitude and its plase relationship with the high frequency voltage which is applied to the oscillating mirror, yields a control signal for following the information track. In accordance with the invention, use is made of an oscillating mirror which is driven electromagnetically and which is connected to oscillation compensation elements by means of springs which elements oscillate in phase opposition to the mirror. Thus, an oscillator mirror is obtained which can readily be excited to natural resonance and thus requires little power. On the mirror a piezo-electric miniature acceleration transducer can be mounted, which can provide a feedback signal so that the oscillating mirror can be included in a self-oscillating circuit.

U.S. Patent No. 4,044,283 to Allison discloses an electromechanical resonator for use in optical scanning systems. The resonator comprises a torsionally resonant system including a torsion rod having one end fixed to a modal zone member and an oscillatory mass at the free end. A flexurally resonant system includes a pair of oppositely disposed flexure arms extending transversely of the torsional axis and having their inner ends fixed to the modal zone member. The nodal zone member is suspended by a coupling spring from a frame member and the

coupling spring permits energy transfer from the flexurally resonant system to the torsional resonant system through nodal zone member. The resonant systems are maintained in oscillation by electrodynamic means coupled with the flexure arms.

U.S. Patent No. 3,947,816 to Rabedeau discloses an omnidirectional optical system arranged for scanning bar coded labels passing a rectangular scanning window with a plurality of interlaced scans in a plurality of differing directions whereby the labels are completely scanned irrespective of orientation. The interlaced and plural directive scanning rays are generated by directing a beam of light, form a laser or like light source, onto a rotating multi-faceted mirror for deflecting the light beam in a line extending in a given direction. A set of fixed mirrors is positioned to deflect the light beam in a number of laterally displaced scanning segments all parallel to the line extending in the given direction. A pair of fixed end mirrors are arranged for reflecting the light from half of the segments back onto the other half of the segments to provide the intersecting scanning pattern. Beam splitting mirrors are interposed in the light beam from the laser for providing additional light beams directed onto the rotating mirror

U.S. Patent No. 3,671,766 to Howe discloses a mirror oscillating through an angular arc defined by arc terminal points. Springs associated with the mirror absorb the kinetic energy of halt at the terminal points and provide the primary driving force and energy to the mirror for reversing the direction of oscillation thereof toward the opposing terminal point. Magnetic means provides a source force to induce oscillation from dead stop and to supplement the spring action by compensating for frictional and other energy losses during operation. Means are provided to bias the mirror to one of the terminal positions when inoperative. The mirror is powered at each terminal point and freely moves at a substantially constant angular velocity between the terminal points.

WIPO Publication No. WO 00/75856 A1 by Metrologic Instruments, Inc. discloses a fully automated package identification and measuring system, in which an omnidirectional holographic scanning tunnel is used to read bar codes on packages entering the tunnel, while a package dimensioning subsystem is used to capture information about the package prior to entry into the tunnel. Mathematical models are created on a real-time basis for the geometry of the package and the position of the laser scanning beam used to read the bar code symbol thereon. The mathematical models are analyzed to determine if collected and queued package identification data is spatially and/or temporally correlated with package measurement data using vector-based ray-tracing methods, homogeneous transformations, and object-oriented decision logic so as to enable simultaneous tracking of multiple packages being transported through the scanning tunnel.

WIPO Publication No. WO 97/22082 to Schmutz et al. discloses a tunnel-type machine vision system which images bar code labels moving through a horizontal plane at variable object distances within the system's object depth of field with a plurality of sequential line images, each with difference object lengths which graduate into plural focused object planes, and the object plane within which the bar code label lies provides a focused optical image of the bar code to a multilinear photodetector which transduces the focused optical image into a corresponding electrical signal for further processing.

UK Patent Application No. GB 2 189 594 A discloses a system for measuring the volume of an arbitrarily shaped three-dimensional object, as the object is passed through a scanning plane on conveying means. The respective dimensions of the object in two perpendicular measurement directions in the scanning plane are measured at intervals during the passage of the object through the scanning plane by two electro-optical systems. The system calculates the cubical volume of the object by determining the area of a rectangle of minimum area that fits around the profile in one measurement plane and multiplying the area of the minimum rectangle by the maximum dimension of the object perpendicular to the one measurement plane obtained from the profile in the other measurement plane.

The April, 1999, Accu-Sort brochure entitled "Tunnel Scanning System" discloses a fixed position tunnel scanning system for use in high speed, high volume sortation systems. As disclosed, the tunnel system employs (i) an Accu-Sort Omni-X or Quad-X laser scanning x-pattern omnidirectional barcode reader arranged about a conveyor belt, and (ii) a Model 4800/5800 controller for muliplexing information produced from the scanners in the tunnel array, as well as photo-eyes and tachometers mounted at the level of the conveyor belt.

The October, 1998, Cargoscan brochure (15 pgs.) entitled "Dimensioning the Right Way: Reliably" discloses fundamental principles and consideration when dimensioning of objects using laser camera triangulation techniques.

The January, 1998, Accu-Sort brochure entitled "The Mini-X" describes the Accu-Sort Mini-X laser scanning x-pattern scanner which generates a single x-pattern using a single solid-state visible laser diode. As disclosed, the Mini-X scanner has two serial ports, photo-eye tachometer, and relay connections.

The 1997 paper entitled "Omni-Scan Tunnel" published by the United States Postal Service (USPS) discloses the general solution specification (called "Omni-Scan Tunnel) for the problem of reading bar code symbols placed on packages, USPS trays and tubs, and other USPS customer mailed products.

A separate listing of the above references on PTO Form 1449 and a copy of these references are enclosed herewith on a compact disk for the convenience of the Examiner.

The Commissioner is also hereby authorized to charge any fee required in connection with this document to Deposit Account No. 16-1340.

Respectfully submitted,

Dated: June 27, 2003

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Thomas J Perkowski, Esq.
Date: June 27, 2003

Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Sheet	1	of	6

Complete If Known	
Application Number	10/009,368
Filing Date	December 7, 2001
First Name Inventor	Zhu et al.
Group Art Unit	2876
Examiner Name	
Attorney Docket Number	108-085USAC00

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	U.S. Patent Documents		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intn'l Class / Sub Class
		Number	Kind Code (if known)			
		6,296,187 B1		Shearer	10/02/2001	
		6,257,490 B1		Tafoya	07/10/2001	
		6,177,999 B1		Wurz et al.	01/23/2001	
		6,147,358		Hecht	11/14/2000	G06K 7/10
		6,137,577		Woodworth	10/24/2000	
		6,123,264		Li et al.	09/26/2000	G06K 7/10
		6,069,696		McQueen et al.	05/30/2000	
		6,064,629		Stringer et al.	05/16/2000	
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		Number	Kind Code (if known)			
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		5,991,041		Woodworth	11/23/1999	G01B 11/24
		5,984,186		Tafoya	11/16/1999	G06K 7/10
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		5,870,220		Migdal et al.	02/09/1999	G02B/026
		5,869,827		Rando	02/09/1999	G06K 7/10
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		Number	Kind Code (if known)			
		5,737,438		Zlotnick	04/07/1998	G06K 9/00
		5,699,161		Woodworth	12/16/1997	
		5,689,092		Wurz et al.	11/18/1997	G01G
		5,661,561		Wurz et al.	08/26/1997	G01B 11
		5,656,799		Ramsden et al.	08/12/1997	G01G 23/58
		5,633,487		Schmutz et al.	05/27/1997	G06K 7/10
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		5,547,034		Wurz et al.	08/20/1996	G01G 19
		5,543,610		Bard et al.	08/06/1996	G06K 7/10
		5,495,097		Katz et al.	02/27/1996	G06K 7/10
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		Number	Kind Code (if known)			
		5,373,148		Dvorkis et al.	12/13/1994	G06K 7/10
		5,331,118		Jensen	07/19/1994	G01G 19/40
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		5,224,088		Atiya	06/29/1993	G11B 7/00
		5,220,536		Stringer et al.	06/15/1993	
		5,193,120		Gamache et al.	03/09/1993	
		5,168,149		Dvorkis et al.	12/01/1992	G06K 7/10
		5,080,456		Katz et al.	01/14/1992	G02B 26/10
		5,076,690		deVos et al.	12/31/1991	G01B 11/26
		4,958,894		Knowles	09/25/1990	G02B 26/10
		4,904,034		Narayan et al.	02/27/1990	G02B 26
		4,717,241		Aagano	01/05/1988	G02B 7/18

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Examiner Initials	Cite No.	U.S. Patent Documents		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intn'l Class / Sub Class
		Number	Kind Code (if known)			
		4,632,501		Glynn	12/30/1986	G02B 26/10
		4,580,894		Wojeik	04/08/1986	G01P 3/36
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		4,063,287		van Rosmalen	12/13/1977	H04N 5/76
		4,044,283		Allison	08/23/1977	H02K 33/00
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PUBLICATIONS

Examiner Initials	Cite No.	Description
		Accu-Sort - Tunnel Scanning System by , www.accusort.com/mktg/as01.html, 1999, p. 1-2
		DIMENSIONING THE RIGHT WAY: RELIABLY by , Cargoscan, 1998, p. 1-16
		THE MINI-X by , Accu-Sort Systems, Inc., Telford, PA, 1998

PUBLICATIONS		
Examiner Initials	Cite No.	Description
		OMNI-SCAN TUNNEL by , Metrologic Instruments, Inc., 1997

FOREIGN PATENT DOCUMENTS								
Examiner Initials		Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intn'l Class / Sub Class	T *
		Office	Number	Kind Code (if known)				
		PCT	WO 00/75856		Metrologic Instruments, Inc.	12/14/2000	G06K 7/10	
		PCT	WO 97/22082		Adaptive Optics Associates, Inc., Cambridge MA	06/19/1997	G06K 7/10	
		GB	GB 2 189 594 A		Integrated Photomatrix Limited	10/28/1987		

PUBLICATIONS		
Examiner Initials	Cite No.	Description
		International Search Report, 2000

EXAMINER **DATE CONSIDERED**

EXAMINER: Initial if reference considered, whether or not citation is inconformance with MPEP 609; Draw line through citation if not in conformance not considered. Include copy of this form with n xt communicati n t applicant.

(INFORMATION DISCLOSURE STATEMENT – SECTION 9 PTO-1449)